

WHAT IS CLAIMED IS:

1. A fuel evaporator composed of an evaporation chamber which evaporates a raw liquid fuel by a high temperature thermal
5 medium to provide a raw fuel gas,

said evaporation chamber comprising a plurality of evaporation chambers serially connected to each other in a ventilation manner, and

at least one raw liquid fuel injector for injecting said
10 raw liquid fuel being provided on each of said plurality of evaporation chambers.

2. The fuel evaporator according to Claim 1, wherein a plurality of the raw liquid injector are provided on any one
15 of said plurality of evaporation chambers.

3. The fuel evaporator according to Claim 1, which further comprise a controller for said raw liquid fuel injector, which, upon receiving a signal for the requirement of said raw
20 fuel gas, selects the raw liquid fuel injector or injectors from which the raw liquid fuel is injected.

4. The fuel evaporator according to Claim 2, which further comprise a controller for said raw liquid fuel injector,
25 which, upon receiving a signal for the requirement of said raw fuel gas, selects the raw liquid fuel injector or injectors from

which the raw liquid fuel is injected.

5. The fuel evaporator according to Claim 1, which has a heat receiving portion for receiving the heat from the heat source, which generates said high temperature thermal medium, provided near the bottom of one of said evaporation chamber, and has a slope downward to said heat receiving portion provided on the bottom of another evaporation chamber or chambers.

6. The fuel evaporator according to Claim 2, which has a heat receiving portion for receiving the heat from the heat source, which generates said high temperature thermal medium, provided near the bottom of one of said evaporation chamber, and has a slope downward to said heat receiving portion provided on the bottom of another evaporation chamber or chambers.

7. The fuel evaporator according to Claim 3, which has a heat receiving portion for receiving the heat from the heat source, which generates said high temperature thermal medium, provided near the bottom of one of said evaporation chamber, and has a slope downward to said heat receiving portion provided on the bottom of another evaporation chamber or chambers.

8. The fuel evaporator according to Claim 5, wherein one of said evaporation chambers is formed so that the thermal conductive area thereof is larger than that or those of another

evaporation chamber or chambers, and said heat receiving portion is provided on the bottom of said evaporation chamber having a larger thermal conductive area.

5 9. The fuel evaporator according to Claim 6, wherein one of said evaporation chambers is formed so that the thermal conductive area thereof is larger than that or those of another evaporation chamber or chambers, and said heat receiving
10 portion is provided on the bottom of said evaporation chamber having a larger thermal conductive area.

10 10. The fuel evaporator according to Claim 7, wherein one of said evaporation chamber is formed so that the thermal conductive area thereof is larger than that or those of another
15 evaporation chamber or chambers, and said evaporation chamber having a larger thermal conductive area has said heat receiving portion.

20 11. A fuel evaporator composed of an evaporation chamber which evaporates a raw liquid fuel by a high temperature thermal medium to provide a raw fuel gas,

 said evaporation chamber comprising a plurality of evaporation chambers serially connected to each other in a ventilation manner,

25 a chamber for controlling a gas temperature, which controls the temperature of the raw fuel gas transferred from said evaporation chamber by means of heat-exchange with said

high temperature thermal medium, and

at least one raw liquid fuel injector for injecting said raw liquid fuel being provided on each of said plurality of evaporation chambers.

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12. The fuel evaporator according to Claim 11, which further comprises:

at least one thermo sensor, which detects the temperature within any of said evaporation chambers; and

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a controller for said raw liquid fuel injector, which, upon receiving a signal for the requirement of said raw fuel gas, selects the raw liquid fuel injector or injectors from which the raw liquid fuel is injected.

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13. The fuel evaporator according to Claim 11, which further comprises:

a low temperature thermal medium inlet, which mix the high temperature thermal medium introduced into said chamber for controlling the gas temperature with a low temperature thermal medium, a low temperature thermal medium passage, and a valve for supplying said low temperature thermal medium; and

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a controller which controls the opening degree of said valve for supplying said low temperature thermal medium.

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14. The fuel evaporator according to Claim 12, which further comprises:

a low temperature thermal medium inlet, which mix the high temperature thermal medium introduced into said chamber for controlling the gas temperature with a low temperature thermal medium, a low temperature thermal medium passage, and a valve
5 for supplying said low temperature thermal medium; and

a controller which controls the opening degree of said valve for supplying said low temperature thermal medium.

15. The fuel evaporator according to Claim 11, which
10 further comprises:

a bypass channel, which withdraws and bypasses the high temperature thermal medium to be introduced into said chamber for controlling the gas temperature, and a bypass valve; and

a bypass controller which controls the opening degree of
15 said bypass valve.

16. The fuel evaporator according to Claim 12, which further comprises:

a bypass channel, which withdraws and bypasses the high
20 temperature thermal medium to be introduced into said chamber for controlling the gas temperature, and a bypass valve; and

a bypass controller which controls the opening degree of said bypass valve.

25 17. The fuel evaporator according to Claim 13, which further comprises:

a bypass channel, which withdraws and bypasses the high temperature thermal medium to be introduced into said chamber for controlling the gas temperature, and a bypass valve; and

a bypass controller which controls the opening degree of
5 said bypass valve.

18. A fuel evaporator composed of an evaporation chamber which evaporates a raw liquid fuel by a high temperature thermal medium to provide a raw fuel gas, comprising

a chamber for controlling a gas temperature, which is
10 connected to said evaporation chamber and which controls the temperature of the raw fuel gas transferred from said evaporation chamber by means of heat-exchange with said high temperature thermal medium,

a passage for a high temperature thermal medium, which is
15 connected to one end of said evaporation chamber, and which introduces said high temperature thermal medium into said chamber for controlling the gas temperature;

a bypass channel, which is communicated with said passage for the high temperature thermal medium, and which discharge
20 said high temperature thermal medium bypassing said chamber for controlling the gas temperature, and a bypass valve; and

a bypass controller which controls the opening degree of said bypass valve.

25 19. A fuel evaporator composed of an evaporation chamber which evaporates a raw liquid fuel by a high temperature thermal

medium to provide a raw fuel gas, comprising

a chamber for controlling a gas temperature, which is connected to said evaporation chamber and which controls the temperature of the raw fuel gas transferred from said evaporation chamber by means of heat-exchange with said high temperature thermal medium,

a passage for a high temperature thermal medium, which is connected to one end of said evaporation chamber, and which introduces said high temperature thermal medium into said chamber for controlling the gas temperature;

a passage for a low temperature thermal medium, which is connected to said passage for the high temperature thermal medium, and which mixes a low temperature thermal medium having a temperature lower than that of said high temperature thermal medium with said high temperature thermal medium, a low temperature thermal medium inlet and a valve for supplying said low temperature thermal medium; and

a controller which controls the opening degree of said valve for supplying said low temperature thermal medium.

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20. A fuel evaporator composed of an evaporation chamber which evaporates a raw liquid fuel by a high temperature thermal medium to provide a raw fuel gas, comprising

a chamber for controlling a gas temperature, which is connected to said evaporation chamber and which controls the temperature of the raw fuel gas transferred from said

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evaporation chamber by means of heat-exchange with said high temperature thermal medium,

a passage for a high temperature thermal medium, which is connected to one end of said evaporation chamber, and which
5 introduces said high temperature thermal medium into said chamber for controlling the gas temperature;

a bypass channel, which is communicated with said passage for the high temperature thermal medium, and which discharge said high temperature thermal medium bypassing said chamber for
10 controlling the gas temperature, and a bypass valve;

a bypass controller which controls the opening degree of said bypass valve;

a passage for a low temperature thermal medium, which is connected to said passage for the high temperature thermal
15 medium, and which mixes a low temperature thermal medium having a temperature lower than that of said high temperature thermal medium with said high temperature thermal medium, a low temperature thermal medium inlet and a valve for supplying said low temperature thermal medium; and

20 a controller which controls the opening degree of said valve for supplying said low temperature thermal medium.

21. A process for injecting a raw liquid fuel from a plurality of a raw liquid fuel injector provided on a fuel
25 evaporator from the outlet of vapor to the inner part toward a plurality of heat sources provided the fuel evaporator from

the outlet of vapor to the inner part to evaporate the raw liquid fuel; which comprises:

a step for injecting the raw liquid fuel from the raw liquid fuel injector or injectors near the outlet of the vapor, when a required amount of evaporating the raw liquid fuel is relatively small; and

a step for injecting the raw liquid fuel from the liquid fuel injector or injectors far from the outlet of the vapor in addition to the injector or injectors near the outlet of the vapor, according to increase in the required amount of evaporating the raw liquid fuel.

22. A process for injecting a raw liquid fuel from a plurality of a raw liquid fuel injectors provided on a fuel evaporator from the outlet of vapor to the inner part toward a plurality of heat sources provided the fuel evaporator from the outlet of vapor to the inner part to evaporate the raw liquid fuel; which comprises:

setting at least one raw liquid fuel injector, which is not actuated at the stationary operation to set at least one corresponding empty burned heat source, while injecting the raw liquid fuel from other raw liquid fuel injector or injectors; and

injecting the liquid fuel from said raw liquid fuel injector, which is not actuated at the stationary operation, in addition to the other raw liquid fuel injector or injectors.